

REMARKS

Claims 1-24 are pending in the subject application, in which a requirement for restriction has been imposed pursuant to 35 U.S.C. 121. The Examiner asserts that the application discloses four species of invention A, B, C and D.

The Applicant hereby elects species A, which the Examiner has identified as a semiconductor bridge igniter containing a polysilicon layer 22 and a substrate 12 containing a silicon and silicon dioxide layer in combination (Figure 2).

Claims 1-4 and 7-20 are generic with respect to species A and B, and claims 21-24 are generic with respect to species C and D. It is respectfully submitted that claim 5 is the only claim limited to the elected species A and claim 6 is the only claim drawn to the non-elected species B.

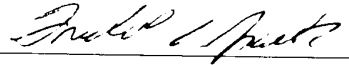
Voluntary Amendments to the Claims

The foregoing non-limiting amendments to claims 12, 18 and 21 are identical in nature to the amendment to claim 1 entered in the paper dated January 25, 2002 to remove extraneous and potentially confusing language from those claims. The deleted limitation, i.e., that the bridge structure is electrically insulated from the substrate, is unnecessarily limiting in view of the disclosure in the application that the semiconductor bridge layer might be applied directly to the substrate without an insulation between them. These amendments also render the claims more clearly generic with respect to species A and B identified by the Examiner.

The Examiner also identifies species C and D as the method of using species A and B, respectively, and asserts that the products and processes of their use are distinct because "the igniter could be used with a method that does not include metalling [sic] and vaporizing the semi-conductor material". However, there is a burden is on the Examiner to provide an example of such a materially different process if a restriction is to be imposed (see MPEP 806.05(h)), and no such example has been provided. The application itself provides only one method of use of the products defined in claims 1, 12 and 18 and in the preamble of claim 21. That method is set forth in claim 21. Conversely, the application provides no suggestion that a materially different product could be used to practice the claimed method. The Applicants therefore respectfully request that the restriction between species A and B (the product) on one hand and C and D (the method of its use) on the other (as set forth in paragraph 3 of the office action) be withdrawn.

Having entered an election and otherwise fully responded to the subject office action, re-examination and reconsideration of the pending claims is now respectfully requested.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Frederick A. Spaeth", is written over a horizontal line.

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COPY OF CLAIMS SHOWING AMENDMENTS

(Added material is underlined, deleted material is bracketed.)

12. (thrice amended) A semiconductor bridge igniter comprising:

a substrate;

an electrical bridge structure disposed on the substrate[and electrically insulated therefrom], the bridge structure comprising a layer of a semiconductor material having a negative coefficient of electrical conductivity at temperatures above ambient temperature and having disposed thereover a layer of titanium, the bridge structure comprising a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed, made by the method comprising depositing a layer of semiconductor material and an exposed layer of titanium thereon on a substrate in a bridge formation, forming contact pads at opposite ends of the bridge formation, and preconditioning the titanium semiconductor bridge igniter by heating it to an elevated temperature to stabilize it against temperature-induced variations in bridge electrical resistance.

18. (amended) A semiconductor bridge igniter consisting essentially of:

a substrate;

an electrical bridge structure disposed on the substrate [and electrically insulated therefrom], the bridge structure consisting essentially of a layer of a semiconductor material and having disposed thereover a layer of titanium, the bridge structure comprising a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section; and

a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed.

21. (amended) A method for initiating an energetic material using a semiconductor bridge igniter comprising a substrate, an electrical bridge structure disposed on the substrate

[and electrically insulated therefrom], the bridge structure comprising a layer of a semiconductor material having a negative coefficient of electrical conductivity at temperatures above ambient temperature and having disposed thereover a layer of metal, the bridge structure comprising a bridge section extending between and connecting spaced-apart pad sections, each pad section being of larger area than the bridge section, and a pair of electrically conductive lands each overlying a respective one of the pad sections and being spaced apart from each other to leave the bridge section exposed;

the method comprising applying a voltage across the lands to generate ohmic heating sufficient to melt the metal and vaporize the semiconductor material in the presence of the energetic material.